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Observations of an Extensive Human Infection by Sarcoptic Mange of the Horse.

By R. A. S. MACDONALD, B.Sc., M.R.C.V.S.

(Reprinted from the *Lancet*.)

The circumstances of this outbreak are peculiar, though not entirely unprecedented. A class of veterinary students was engaged upon the performance of post-mortem operations on a horse. The horse had a history of generalised sarcoptic mange, the disease having gained such a hold that it was considered an unsound economic proposition to proceed further with treatment. It was destroyed one Saturday morning at 10 a.m., and thereafter was left lying upon a concrete floor while the students in question palpated, dissected, and operated upon the carcase for a period of time which varied with the individual from two to five hours.

Contact.

Of the students who had any contact with the carcase in question, approximately 53 per cent. became infected. On the other hand, the non-infected individuals were either those who were engaged upon the head and neck (which parts had been cured by the previous treatment) or those who had been little more than onlookers, in that they had been engaged in swabbing incisions, etc., to assist the actual operators. In short, of these students whose hands and clothing came into direct and prolonged contact with the infected carcase 100 per cent. complained of subsequent symptoms.

Symptoms.

The most constant symptoms common to every case were :—

(*a*) Itch of a most pronounced and continuous nature, accentuated by surface warmth, induced by exercise, by lying in bed, and by friction in the process of inunction of the affected areas.

(*b*) A papular eruption. This was present in all the affected cases at the site of contact with the carcase—*i.e.*, forearms, ankles, and calves of the legs. The hands in most cases, though not in all, escaped infection, no doubt owing to washing with carbolic soap immediately after or in some cases during the work on the dead subject. In some cases the forearms escaped while the ankles were affected, or vice versa. Lesions on the shoulders, upper arms, trunk, and thighs occurring in some of the students were in all cases secondary, there being no direct track of infection on the skin. The papules were the size of a large pin's head, of a fiery-red colour, and were very slightly elevated above the surface of the surrounding skin. They seemed to correspond to hair-follicles, and the crops were luxurious. It is perhaps significant that in Case A (referred to later) the interdigital spaces were the seat of the infection ; here also the papules were more circumscribed, more elevated, and slightly pointed.

Treatment.

From the strictly scientific point of view it may be regarded as somewhat unfortunate that the affected individuals were all well versed in the life-history and pathogenicity of *Sarcoptes scabiei*, and that the morbid conditions were therefore rapidly recognised, and curative measures taken accordingly. It might be noted here that the sooner the infection was realised the more easily was a cure effected. Thus, in B's case, after two hours' work on the carcase he became aware of an intense itching on the right forearm, with some slight hyperæmia of the part. He at once painted the area with weak tincture of iodine, and had no further trouble at that point. Eight hours later similar lesions appeared upon the calves of the legs. Tinct. iodin. was again applied and the eruption disappeared in one day. Case C became aware of infection before leaving the establishment at 1 p.m., but considered the violent itch to be a form of scabiophobia. At 2-30 p.m. he examined the lateral aspect of the calf (an area of contact with the carcase), and found the cause of the itch to be the typical papular eruption. He at once took a hot bath and scrubbed the affected area for some minutes with a stiff nail-brush. The area was dressed with 1 in 10 sulphur ointment until two days after infection, by which time the irritation had disappeared, although the eruption did not entirely subside until two days later. Case A itched during the first day and only awoke to the situation on the second day. He became ultimately affected with the typical papular eruption in the interdigital spaces, all over the arms, as well as almost all over the legs. This is one of the few cases with sequelæ.

The treatment adopted varied in detail, but, generally speaking, consisted in scrubbing the whole body, and especially the affected areas, in a hot bath to which was added some coal-tar disinfectant or washing soda. This was followed by inunction with a preparation in which sulphur was the chief ingredient, adjuvants being salicylic acid, ammonium sulphide, ol. picis, etc. The presumably infected clothing was

in most cases cast off at once pending disinfection. In connection with the latter point one notes that Cases D and E report no trouble on the Saturday of infection nor on the following Sunday—when different suits were worn—but on the Monday, when the suits worn on the Saturday were resumed, they became typically infected. Case F applied pure creosote to each papule with the aid of a match-stick. This treatment relieved the itch but had no effect on the eruption, and on the Wednesday he fell into line with the hot scrubbing and sulphur applications.

Sequelæ.

A few cases reported a slight dermatitis which was relieved by the use of ordinary emollients such as ung. zinci. Case F seems to have induced a pustular dermatitis. These dermatites were doubtless due to the enthusiastic scrubbing and inunction. Case A is of special interest. After spending three days in bed in a state of acute discomfort (all the while treating himself with a sulphur ointment) he developed a diffuse dermatitis which affected all parts of the body, including the face. This was succeeded by a pomphlyox due to a streptococcal infection from which he was still suffering more than three weeks after the incidence of the infection. In this case there is also a history of an attack of scabies during infancy.

Microscopy.—The carcase was scraped on the Sunday morning—*i.e.*, 24 hours after death. *Sarcoptes scabiei* were found to be present in abnormally large numbers.

One concludes from the above observations that the mites migrated from a killed and chilling equine host to human hosts, passing through the clothing with little delay and setting up irritation in a period varying from 2 to 24 hours.

Protective Inoculation against Canine Distemper.

AN ANTAGONISTIC VIEW.

By HENRY GRAY, M.R.C.V.S.

In the report of the March meeting of the Central V.S. in the *Veterinary Record* of April 15th, I note that certain speakers scouted the idea that distemper was caused by Ferry's *bacillus bronchisepticus*, but they made no reference to that disease being set up by a filtrable virus as demonstrated by Carré and other eminent bacteriologists. As this disease, just like equine influenza, swine fever, fowl plague, cattle plague and many other *true* contagious diseases is due to an invisible or ultra-microscopical virus, how is it possible to vaccinate against it with vaccines, sera or toxins prepared from visible micro-organisms, now generally accepted as normal inhabitants of the dog's system, and commonly termed secondary or superadded infections?

Canine distemper, being analogous to swine fever, equine influenza, and fowl plague, has an analogous ætiology, and most of the younger members of the profession must know that the common symptoms or lesions in swine fever are caused by a secondary invader or normal inhabitant of the pig which does not transmit by contact the natural disease nor give immunity to natural infection.

I have used the many vaccines, sera or toxins on the market, and when I have found that in numerous instances dogs inoculated with them have developed the disease and often succumbed from it after coming in contact with the natural infection, I have been forced to conclude that none of the material is of any use as a protective. The users of vaccines on the market are like the soldiers who went into battle wearing charms; those who came through unscathed attributed it to the charm, and those who did not said nothing about it. Users of protective inoculation are told of the dogs that do not develop the disease, nothing about the numerous cases which contract it or succumb. Not every *unvaccinated* dog contracts the disease even when exposed to infection. Many dogs escape one or more exposures and contract it at some future exposure. Numerous unvaccinated dogs have the disease so slightly that it is often overlooked; such slight cases after recovery are in the great majority of instances subsequently immune to the most virulent infection.

Up to the present there is no preventive treatment beyond keeping animals away from the infection, and no curative treatment, whether biological or medicinal, to surpass the hygienic treatment in results.

By understanding the natural history of the disease, and recognising it in its earlier stage, the practitioner can generally reduce the mortality to under 25 per cent., provided, of course, he has patience enough to enforce strictly four or five weeks' rest in a draughtless place having an equable temperature of about 60°F., and prescribes a milk dietary.

His greatest mortality will be among those under six months, those in an advanced stage before being brought to his notice, and those of certain breeds noted for their susceptibility.

Dysentery in Lambs.

OFFICIAL INVESTIGATIONS.

Sheep farmers, not only in Northumberland, but in the six northern counties and in the south of Scotland, are watching with the keenest interest, says the *Newcastle Chronicle*, the investigations into the destructive lamb disease, which are being conducted by the Ministry of Agriculture experts on the North Tyne, with Bellingham as the centre.

"Lamb disease," as it is colloquially termed, has been described as new, but as a matter of fact it is known to have broken out in Northumberland over ten years ago, and, unfortunately, has spread considerably until it now occurs regularly every lambing season on a considerable number of sheep farms in the Bellingham and North Tyne districts, and on farms lying eastward to Belsay, the losses having been as high as 40 per cent. of the lambs born.

It has also shown itself in Durham, Lancashire, Cumberland and Westmorland, and in some Scottish districts it has been noticed for fifteen years, the counties affected being Argyleshire, Dumfriesshire.

Kirkcudbrightshire, Midlothian, Perthshire and Wigtonshire.

Lambs become affected soon after they are born, and death quickly follows, there being probably no recovery. Professor Gaiger, the principal of the Glasgow Veterinary College, has written a brief account of it, in which he says: "The dead lamb shows a tail region all soiled with yellowish brown blood-tinged excrement. On opening the carcase, the intestines are seen to be inflamed, and on closer examination of them, the ulcers can be seen . . . each has a yellow centre, with a bright red ring of inflammation immediately surrounding it."

It is the microscopic examination of these ulcers, either from newly dead lambs, or from lambs which are affected with the disease, that the investigators at Bellingham are carrying out.

The local arrangements for the investigations have been made by Mr. J. T. Farbridge, the honorary secretary of the Bellingham Local Committee. Sir Stewart Stockman, the Chief Veterinary Officer of the Ministry of Agriculture, has two members of his staff, Captain Daubney and Mr. Lloyd, now at work, and these gentlemen have already met many of the farmers of the district, and discussed the disease with them. It is hoped that Sir Stewart Stockman himself will also take part in the investigations.

It should be mentioned that the subject of "lamb disease" has been taken up by the Northumberland Agricultural Society, which has voted a sum not exceeding £50 towards the cost of defraying the local expenses.

The Perroncito Testimonial.

The committee for the promotion of the Public Testimonial to Professor Edoardo Perroncito, of Turin, have issued the following circular:—

To honour those who have dedicated their lives to science and who by their studies, observations and researches have benefited humanity, is a duty in which none of us ought to fail in order to show the gratitude and admiration which we must all feel towards them.

To this duty we render obedience, in honouring Edoardo Perroncito, who has brought light where once was darkness and mystery. It was he who demonstrated for the first time the parasitic nature of the anæmia of miners, that terrible disease which struck down inexorably the workers of the St. Gothard Tunnel, thus contributing to save from certain death numberless innocent victims of labour. That is sufficient to give him the right to be numbered among the Benefactors of Mankind.

Furthermore, numerous studies on the parasites of man and animals and their infective and contagious diseases have made him celebrated throughout the whole scientific world, as is attested by the honours of which he has been considered worthy by almost every nation in the world who have inscribed his name in the album of numerous and renowned scientific academies and conferred on him honorary degrees.

He has now arrived, in accordance with the law, at the limit of his career as a teacher, which he has exercised for nearly fifty years, leaving ineffaceable traces in the field of parasitology as in that of comparative pathology to which he gave himself with so much ardour. It is in the highest degree fitting and due that all those who have known and appreciated him should unite in attesting to him their admiration and gratitude for what he has done as a scientist teacher, by rendering him a tribute worthy of his work.

To this end a committee has been formed in Turin, where he has spent his working life, and completed his favourite studies, and from Turin the committee send an appeal to all scientists in the world, to all his numerous pupils and colleagues, to all those who appreciate his high merit, to honour him.

Signed by the President, Professor Ferruccio Faelli, followed by the names of a committee of honour composed of nineteen representative Italian veterinary surgeons and twenty-seven of the best known veterinary surgeons in other parts of the world.

The secretaries are Professor C. Barile and Dr. D. Giovine, at Via Nizza, 52, Turin, to whom subscriptions should be sent.

The Canadian Cattle Embargo.

General Moore's Views.

The following letter concerning the Canadian Cattle Embargo appeared in the *Morning Post* of Thursday, April 13th, from Major-General Sir John Moore, F.R.C.V.S.

To the Editor of the "Morning Post."

Sir,—The remarks in your leading article relative to the Canadian cattle embargo will be regretted by many of your consistent readers and supporters who admire your usually broad Imperial views. As a professional man and one who has visited and served in all the Dominions of our Empire, and in North and South America, perhaps you will permit me, through the medium of your paper, to express a personal opinion on the embargo question. In so doing I have only the desire of the furtherance of our Empire and the closer union of its component parts as my aim.

I gather from your article, also from the remarks of Mr. Churchill at Dundee on the 7th inst., and from those of Colonel Le Roy-Lewis at the Central and Associated Chambers of Agriculture on the 4th inst., that the basis of objection to the importation of live cattle from Canada is a sanitary one in relation to the preservation of our herds from contagious disease, the recent serious outbreak of foot-and-mouth disease perhaps lending colour to the danger. Apart from the clean bill of health which Canada enjoys, I venture to express a professional conviction that the veterinary authorities of the Dominion on the one hand and our home veterinary service of the Board of Agriculture on the other are quite equal to safeguarding the agricultural community of this country. The risks of contagion from Canada are no greater than from elsewhere, whether these are from Ireland, from the Continent of Europe, or existent in our own circle. It may not be within the knowledge of many that during the latter part of the war the whole of Belgium and the greater part of Northern France was seething with foot-and-mouth disease; it was, indeed, so bad at the Armistice that Royal Army Veterinary Offcers under me in the Expeditionary Force were called on to aid in control in their respective areas. Yet with all the intercourse between the areas of our armies in the field and districts at home through men proceeding on leave, the disease was excluded from our shores. If this can be done by a veterinary service during the difficult times of war, surely in the easy times of peace, with a large expanse of ocean as a cordon, exclusion of disease from Canada should be mere child's play. It is, of course, taken for granted that Canada would export

only genuinely bred Canadian cattle and not animals drawn from the United States.

To my mind, therefore, it cuts very thin ice to base prohibition on the score of contagious disease. What are the factors underlying Canada's request for consideration? In no way does the question relate to "a passion for interfering in our domestic politics." It is simply a matter of reciprocity with the Mother Country in trade, a desire to share in activities which are very largely appropriated by countries which are outside our Empire. The situation is very plain. In our islands only 56 per cent. of the beef we consume is home grown, and so far as London is concerned, only 20 per cent. The rest is imported as frozen or chilled beef. Where from and through what agency? Almost entirely it hails from the Argentine, and the trade is entirely in the hands of the large packing house interests controlled in Great Britain and the United States with plants in the Argentine and the United States. We need not search further to illustrate the unjust state of affairs.

It is a very long subject, and I cannot adequately deal with it in a short letter of this kind, but unquestionably our aim should be to reduce as far as possible the frozen and chilled meat trade and to increase proportionately the home-grown fresh meat market. If we cannot produce stores in sufficient quantity in our islands to meet the demands of consumers, by all means let us get them from our own children and support our own Dominions instead of patronising foreign markets. Our breeders have made Argentina; the quality of its herds is now superb. If our attention in a similar manner was turned to our Dominion across the sea, the same happy result would follow in due course to the benefit of both.

You say quite truly that the price of meat in this country is ruled by the chilled meat market. What is not eaten to-day can be kept till to-morrow, next week, next month, or next year, and a hold up of price against the consumer is possible. Let us therefore hasten back to the pre-war days of growing, as far as we can, the fresh meat which we prefer, and let us give custom beyond this to our Colonies who have helped us to fight for the maintenance of our Empire, whether such custom is in the nature of store cattle for fattening, fat stock killed at ports, or chilled and frozen meat.—Yours etc., J. MOORE, Major-General, F.R.C.V.S.

5 Briardale Gardens, Hampstead, N.W. 3.
April 12th, 1922.

Live Stock Problems Discussed by Minister.

Writing in a special issue of the *Yorkshire Herald*, the Minister of Agriculture, Sir Arthur G. Boscawen, said, among many other interesting things:—

With regard to live stock I am glad to say that although the Geddes Committee recommended a big reduction of expenditure on the Ministry's live stock schemes, the Government have agreed to a continuance of the bull and boar schemes and the milk-recording scheme. These schemes, I am convinced, constitute one of the most valuable forms of assistance which the Ministry renders to agriculture. These islands have long been famed as the stud farm of the world, and the object of the bull and boar schemes is to grade upwards the whole of the ordinary farm stock of the country. The scrub bull must be eliminated. No farmer can be successful who is content with inferior stock. In this connection I regard the Ministry's milk-recording scheme as distinctly beneficial. Farmers are now beginning to realise the value of the milk-recorded cow. It is all the more necessary at a time when milk producers are faced with so many difficulties that the poor milker should be eradicated from the herd and only those cows retained which yield a good return for their keep.

Although I have been able to retain the milk-recording scheme and the bull and boar schemes, I was bound to make a cut somewhere, and I came to the conclusion that in view of the restrictions on the use of unsound stallions imposed by the Horse-breeding Act of 1918, the grants to the Heavy Horse Societies could be dispensed with. I have also accepted the recommendation of the Geddes Committee that the cost of the light horse breeding scheme should not be borne after this year on the vote of the Ministry of Agriculture, but should be transferred to the War Office if it is considered essential for military purposes to continue the scheme. I know this scheme has been appreciated and well supported in past years by Yorkshire farmers, who are renowned for their love of a horse and for sport. I should add that any application that the Hackney Horse Society may wish to submit for funds to encourage the breeding of Hackneys should now be made to the War Office, as the possibility of continuing the light horse scheme is now under consideration of that department.

We have been visited by the most serious outbreak of foot-and-mouth disease since the eighties of last century, and Yorkshire has suffered more than any other county. I have been compelled in the interests of farmers themselves to impose restrictions on the movement of stock, which could not fail to be irksome and to involve loss both directly and indirectly. But in spite of the inconvenience and loss, agriculturists have recognised the necessity for the restrictions which have been imposed, and I am glad of this opportunity of expressing my appreciation of the support of my policy for dealing with the disease which I have received from agriculturists, especially in Yorkshire. That policy, as your readers are aware, has been for the most part that of immediate slaughter and the payment of compensation to the owners of the slaughtered stock. It is an expensive policy, and will probably cost, before the disease is finally eradicated, something like £1,000,000. The Government have agreed to find half of this money from the National Exchequer, and the other half will be borne by the ratepayers of the whole country.

Some of my critics have asked what the Government are doing for agriculture. My answer is that here at any rate we have provided a substantial sum of money which has gone a long way to diminish the loss suffered by owners of diseased stock, and which has enabled me to carry out the slaughter policy and so prevent the disease from spreading through the whole of the live stock of the country. There are, however, limits to the slaughter policy. It is obvious that if the disease really became epidemic, wholesale slaughter would involve a serious depletion of our flocks and herds. There is also the question of expense. Owing to the present national financial situation, it is imperatively necessary to limit expenditure as much as possible. It is for this reason that I decided, after the first onslaught of disease had been arrested and we were in a position to ensure adequate supervision, that where conditions were suitable the method of isolation and cure must be adopted. It should be understood that wholesale and indiscriminate slaughter has never been the policy of the Ministry. In the case of valuable pedigree herds isolation has always been adopted, owing to the excessive cost of compensation, and to the necessity of preserving our best stock. Happily the Ministry's efforts have been successful, and we seem now to be within measureable distance of eradicating this devastating disease. Large areas of the country have now been freed from restrictions, and I shall continue to enlarge the free area as soon as it is safe to do so.

At a recent meeting of the directors of the Scottish Chamber of Agriculture, a resolution was submitted in connection with foot-and-mouth disease, urging that all importations of moss litter, fodder, or live poultry should be prohibited for all time, and that it should be provided that all sacking, packing straw, etc., from foreign countries should be excluded from this country. After some discussion it was agreed to support the exclusion of packing straw.

The Veterinary Record.

6th May, 1922.

WHOLE-TIME SALARIES.

The Salaries Committee having now issued its considered judgment as to the minimum salaries which ought to be paid to veterinary officers holding public appointments, may we be allowed to express the hope that the Ministry of Agriculture will lead the way by considering the difference between the salaries it pays to its junior officers entering the service, viz., £200 per annum, a salary only equal to a foreman labourer, and those paid to officers of the R.A.V.C. and many municipal services. That the duties of the veterinary officers of the Ministry are responsible no one will deny, and the recent outbreak of foot-and-mouth disease has shown how very necessary it is that the Ministry should have at its immediate command a sufficient staff of carefully selected, specially trained and thoroughly experienced veterinary officers who can at once be drafted to any outbreak and promptly deal with it, just as an army is kept fully trained ready to battle at an hour's notice, thus saving, including their salaries, thousands of pounds and much disturbance of agricultural industry. But, in order to do so, the Ministry should do as the Army does—make the service worth entering by paying its officers a salary in keeping with their position, training and education, and so retain their services. At present the Ministry is only third on the list of positions sought after by the profession, as evidence two of its officers have lately left to join County and City Services. We feel certain that it is only necessary those facts should be brought to the notice of the Ministry to have them remedied.

No reflection is cast on the present officers of the Ministry in the foregoing remarks, but it is not just to pay any officer according to the number of persons who would apply for his position when vacant. Logically, if such were the case, some of our Ministers and high paid officials would have to accept big reductions in their salaries.

It is an old adage that the labourer should be worthy of his hire. We would add that the hire should also be worthy of the labourer.

Royal College of Veterinary Surgeons.

Annual Election of Council, June, 1922.

The last day for the nomination of candidates for election to the Council is May 9th. The voting papers will be issued on May 23rd, and must be returned to the College, 10 Red Lion Square, W.C.1, on or before May 30th. The election will take place at the Annual General Meeting on Tuesday, June 6th.

The nominations received to date are as follows:—

Nominees.	*Proposers.*
Abson, J., Sheffield.	O. C. Bradley.
	S. Stockman.
Blenkinsop, L. J., London.	O. C. Bradley.
	F. T. G. Hobday.
Brittlebank, J. W., Manchester.	F. Hopkin.
	J. Spruell.
Coleman, J. C., Swindon.	J. H. Carter.
	J. W. Brittlebank.
Howard, P. J., Ennis.	J. F. Craig.
	T. F. Spencer.
Hughes, R., Oswestry.	F. Hopkin.
	J. Spruell.
Livesey, G. H., Hove.	L. J. Blenkinsop.
	F. T. G. Hobday.
Moore, J., London.	F. W. Garnett.
	F. T. G. Hobday.
Revill, W. C. B., Saffron Walden.	T. Parker.
	T. D. Young.
Sumner, H., Liverpool.	S. H. Slocock.
	J. B. Wolstenholme.

There are eight vacancies.

Special Meeting of Council.

A Special Meeting of Council was held at the College, 10 Red Lion Square, London, W.C.1, on Thursday, April 20th, 1922, when the following members were present:—

Sir Stewart Stockman, Vice-President, in the chair, Colonel J. W. Brittlebank, Messrs. J. B. Buxton, J. H. Carter, W. S. King, J. W. McIntosh, G. P. Male, T. S. Price, P. J. Simpson, S. H. Slocock, T. F. Spencer, J. Willett.

The Secretary read the minutes of the previous special meeting held on April 7th, 1922, which were thereupon confirmed.

Letters of apology for absence were received from the President, Major J. Abson, Professor S. H. Gaiger, Mr. A. Gofton, Sir John M'Fadyean, Messrs. J. McKinna and W. J. Mulvey.

Preliminary Educational Examinations.

On the motion of Mr. Male, seconded by Lieut.-Col. J. W. Brittlebank, the following resolution passed at the special meeting on April 7th was duly confirmed:

"That the revised list of Preliminary Educational Examinations adopted at the Special Meeting of Council on the 8th April, 1921, shall come into operation on March 31st, 1923."

On the motion of Sir Stewart Stockman, the seal of the College was attached to the bye-law as thus revised.

Victoria Veterinary Benevolent Fund.

A meeting of the Council of this Fund was held at 10 Red Lion Square, London, W.C.1., on Thursday, April 6th, 1922, when the following members were present:—

Messrs. S. H. Slocock, R. C. Trigger, E. A. West, J. W. Willett.

(1) *Apologies for absence.*—Letters of apology for absence were received from Messrs. Kelland, Gofton, Jackson-Young, J. Ewing Johnston, T. M. Inglis.

(2) *Minutes.*—The minutes of the previous quarterly meeting, having been published, were taken as read and confirmed.

SECRETARY'S REPORT.

The SECRETARY submitted the following report, which was duly approved:—

Since the previous quarterly meeting the following new subscriptions and donations have been received:—

Subscriptions:—	£	s.	d.
Wyleys Ltd., Coventry	1	1	0
J. Woodrow	0	10	6
J. A. Turner	0	10	6
E. C. Russell, Major	1	1	0
J. W. Pollock	0	10	6
J. Tainsh, 1921-1922	1	1	0

Donations:—	£	s.	d.
Bolton's Cinema, per E. A. West	31	10	0
Exors. of late John Hatch	100	0	0

Collecting Boxes:—	£	s.	d.
A. B. Fewings	1	3	2
Officers Irish Command	3	2	0

A promise has been received from the Connaught Veterinary Medical Association to forward as large a contribution as the resources of the Association will permit.

Letters have been addressed to all the Veterinary Associations whose subscriptions was not paid in 1921, and it is hoped that during the present year all arrears will be paid.

Reminders will be issued with the annual report to all Members whose subscription for the present year has not yet been paid. It would enable the Fund to reduce its administrative expenses considerably if members would agree to pay their subscriptions by means of the Bankers' Order. Forms for the purpose can always be obtained from the office.

(4) *Annual Report.*—The Secretary submitted a draft of the Annual Report of the Council, together with the Auditor's Financial Statement.

It was resolved, "That the report and financial statement be approved and ordered to be issued to the members of the Fund.

(5) *Life Members.*—It was resolved, "That, in consideration of special donations, the following gentlemen be elected Life Members of the Fund: Mr. F. W. Garnett, Mr. A. M. Munro, Mr. T. F. Spencer."

(6) *Cases.*—No. 4, Widow, five children under 21. Three at school. The grant of 10s. per week was continued, the matter being left in the hands of the Executive.

No. 22. Widow, aged 85. Very infirm. A special report was submitted on this case, and it was resolved that the grant of 25s. per week be continued for the present.

No. 57. Daughter of Veterinary Surgeon. Ill-health. This case was left in the hands of the Executive with power to act.

No. 60. M.R.C.V.S. A letter was received from this member thanking the Council for the assistance rendered to him, and stating that he now hoped to be able to support himself.

It was resolved that the grant be discontinued.

No. 62. Widow, aged 60. Two sons and two daughters, one in delicate health. Temporary income £25 a year.

It was resolved, "That a grant of 5s. per week be made, the case to be reconsidered in six months' time."

(7) *Investments.*—The question of the investment of donations received during the year was left in the hands of the Executive Committee.

R.C.V.S. Council Election.

To the Fellows and Members of the R.C.V.S.

Gentlemen,—I again have the honour of being nominated as a candidate at the forthcoming election of members of Council R.C.V.S.

I claim to be one of the few members of Council who have the interest of the General Practitioner and the Junior Officers of the Military and Civil Services at heart, and if it be your pleasure to re-elect me, I shall always lay myself out to strenuously fight for right and justice for these.

I sincerely hope that, if elected, I may be placed near the head of poll, as a message to the Council that YOU APPROVE of my efforts upon your behalf in the past.—I have the honour to be, Gentlemen, Your obedient servant, JOHN C. COLEMAN.

Swindon, Wilts, April 24th, 1922.

Abstracts and Reviews.

Ticks and Surra.

There are several ways in which different blood-sucking arthropods play a part in the spread of disease, *e.g.*, in some diseases the causal agent is carried direct from place to place through the agency of flies; in other cases the causal agent of the disease undergoes certain changes in the fly before the disease can be transmitted.

Though surra can be transmitted by direct transmission from animal to animal through the agency of certain Tabanidae, many investigators believe that the disease is also transmitted by indirect transmission, and that a long period elapses between the time that the transmitting agent sucks the blood of an infected animal and the time when it becomes infective to other animals. Up to the present, all investigations regarding the transmission of surra have been carried out with a few species of Tabanidae, *Stomoxys calcitrans* and fleas. During our investigations on surra, we came to the conclusion that the spread of surra cannot only be confined to the winged and

comparatively short-lived insects or flies, but that those insects or arthropods, which can survive for over a year, may also have some bearing upon the spread of the disease. We have observed that—

(1) Surra breaks out frequently in the same district and stables, though as far as could be ascertained, the disease had not been imported into that district;

(2) In one outbreak of surra the disease first made its appearance among ponies kept in a certain, stable. For two years this stable was not used; two years later, when ponies were again placed in this stable, cases of surra appeared.

From enquiries made it would appear that the ponies when placed in this stable were perfectly healthy and had not come from a surra-infected area, nor were any animals in this area at the time when surra appeared amongst these ponies known to be infected with surra. The question arises, did these ponies contract the disease when at work or was the disease contracted in the stable. If in the latter, the only explanation is that there were reservoirs of this disease in the stable that could survive for two years.

Several species of *Ornithodorus* are known to live for several years, and some of them can live without food for a year and more if circumstances for getting food are unfavourable to them; they are in the habit of remaining in one place and hide underground or in the crevices of walls during the period when they do not require food; they come out, usually at night, to feed on their host. Unlike many other ticks they complete their feed in a short time, and do not cling to their host for a long period as is the case with many other ticks.

In the Punjab only one species of *Ornithodorus*, known as *Ornithodorus. lahorensis*, is on record; there is another species—*Ornithodorus savignyi*—recorded from Gujrat District, Bombay Presidency, Central Provinces and Madras Presidency. No other species of this genus had been recorded from India till we happened to find during our fly survey campaign a species near *Ornithodorus lahorensis*, but distinctly different from it in several minute details. This species was sent to Professor Brumpt, of Paris University, the well-known authority on ticks, for identification; he informed us that the species is new and proposed to name it *Ornithodorus crossi*. This species was found in large numbers in the Murree hills.

Sixteen transmission experiments were carried out with this new species of tick. These ticks were first fed on camels, in the peripheral circulation of which trypanosomes were present in great number. Some of these ticks were interrupted in the middle of their feed, and after an interval of 1—20 minutes were allowed to finish their feed on healthy animals, whereas some were allowed to complete their feed on the surra-infected animal, and after varying intervals of 5—22 days were placed on healthy animals, but in no case was surra transmitted. Those ticks which had an interrupted feed and were after 1—20 minutes allowed to complete their feed on healthy animals were again (after an interval of thirty-four days) placed on healthy animals, but in no case was a positive result obtained.

The maximum number of ticks used was 18 and the minimum 5.

Further experiments were about to be discontinued, as the above experiments apparently proved that this new species of tick was incapable of transmitting surra; however, 10 ticks of this new species which 46 days previously had had a complete feed on a surra-infected animal were allowed to bite a healthy animal, and the result was again negative. After a further interval of 21 days, when the ticks (both those which had interrupted and uninterrupted feeds) in the breeding vessels were hungry, they were fed on a healthy animal, and in addition to these ticks (42 in number) two *Ornithodorus lahorensis* which had 22 days previously been fed on a surra-infected animal were fed on the same healthy rabbit; this rabbit was under daily blood examination, and 10 days after the ticks had fed upon it trypanosomes appeared in its blood. The minimum and maximum intervals between the feed on the surra-infected animal and this healthy rabbit was 22 and 67 days respectively. As the appearance of the trypanosomes in the blood of this rabbit was most surprising, 36 of this new species of tick, after a further interval of 16 days, were fed on a healthy rabbit, and the two *Ornithodorus lahorensis*, after an interval of 14 days, were fed on a white rat. The rabbit and the rat were kept under daily blood examination; and after 11 days trypanosomes were observed in the blood of the rabbit, whereas the blood of the rat after 62 days daily examination remained negative. The 36 ticks of this new species were again fed, after an interval of 18 days, on a healthy rabbit, in the blood of which trypanosomes were observed eight days afterwards. These ticks transmitted the disease to a healthy rabbit 67, 83, and 101 days after feeding on an infected animal, but were not infective after intervals of one minute to 46 days; this would show that there is apparently a life cycle of the trypanosomes within the tick. How long the tick can remain infective, what changes take place in the life cycle of the trypanosomes within the tick, and the minimum number of ticks required to transmit the disease has yet to be determined; it also remains to be ascertained whether other species of *Ornithodorus* and other ticks are capable of transmitting the disease. It is not impossible that different species of ticks will be found capable of transmitting the disease (in the case of spirochaetosis of fowls this disease is transmitted by three different species of ticks). The fact that this new species of *Ornithodorus* is capable of transmitting surra after a long interval may explain why surra breaks out yearly or periodically in the same stables and in the same districts, though as far as can be ascertained cases of surra have not been imported into these stables or districts; the tick may act as the reservoir of the disease, and thus the disease may be carried over from year to year. The fact that surra makes its appearance during the hot and

rainy months may be due to the fact that many species of ticks hibernate during the cold months and are most active during the hot and rainy season. As soon as one animal becomes infected through the tick the disease may rapidly spread during the rainy season from animal to animal through the agency of Tabanidae. This paper is far from complete, but this note on the transmission of surra by ticks may be of interest to other investigators working on Trypanosomiasis.

[Department of Agriculture, Punjab. Veterinary Bulletin No. 6 of 1921. A note on the Transmission of Surra by Ticks, by Captain H. E. Cross, I.C.V.D., M.R.C.V.S., D.V.H., A.Sc., Camel Specialist, and P. G. Patel.]

The Accredited Herd Plan.

The accredited herd plan is a co-operative movement involving the United States Bureau of Animal Industry, the various State veterinary officials, the owners of cattle (either dairy or beef types), and last, and of equal importance, every qualified veterinarian in the United States.

A repetition of the definition of an accredited herd may not be amiss.

"An accredited herd is one in which no animal affected with tuberculosis has been found upon two annual or three semi-annual tuberculin tests, and by physical examination, applied by a veterinary inspector of the United States Bureau of Animal Industry, or a regularly employed veterinary inspector of the State in which co-operative tuberculosis eradication work is conducted by the United States Department of Agriculture and the State."

As the detection of tuberculosis depends almost wholly upon the use of tuberculin tests, it is well for us to consider the various tests and combinations of the same, which have been given approval.

"The initial testing in accredited herd work may be either the subcutaneous or intradermic method, but the ophthalmic method shall only be used in combination with the subcutaneous or intradermic."

"The final test on herds shall be by such combination of methods as may be deemed most advisable by the State and Federal officials."

The Subcutaneous Test.

Veterinarians are familiar with the use of the subcutaneous method, as it has, until recently, been the only officially recognized, and the generally used, tuberculin test. I therefore deem it not worth while to discuss, at any great length, the application and interpretation of this mode of testing.

With the taking of three temperatures, at least two hours apart, and the injection of the minimum quantity of tuberculin necessary to produce a reaction, an interim of eight hours is followed by a resumption of temperature measurements every two hours or oftener if considered advisable, until the eighteenth hour after injection, when, if there is no indication of a rise in temperature, the measurements may be discontinued and the animal classed as apparently free from tuberculosis. The varying rises in post-injection temperatures over the pre-injection temperatures and the differentiating limitations referable to suspects and reactors are also well understood. Consideration is also given to the history of the herd or animal, any circumstances unfavourable to a fair test and any physical evidences.

The Ophthalmic Test.

The ophthalmic method, when carefully applied, and its results likewise observed, ranks very high in point of efficiency. The Bureau of Animal Industry is now and has been for some months past supplying the inspectors with tuberculin in the disc form for use in this method of testing, each disc containing 0·1 gramme old tuberculin.

Only one normal eye should be treated, the other normal eye being observed as a control. Two instillations are desirable. The first tablet is used as a sensitizing agent, and the second is referred to as the diagnostic tablet. Occasionally, in the case of an uncertain reaction, a third tablet should be instilled about four or five hours following the second disc. The best results are obtained when the tablet is instilled well up under the upper eyelid, where it lies contiguous to the secreting structures, the lids being held in apposition until the tablet has dissolved, which will be about 30 or 40 seconds.

The number of hours allowed for sensitization has been suggested at from 15 to 72. Personally I doubt if there should be any great diminution in the maximum of hours suggested, with its consequent abbreviation of the sensitization period.

A reaction is indicated by photophobia, lacrimation, hyperæmia and mucopurulent exudate, either occurring in the order named, or they may all be present simultaneously. A mucopurulent exudate in varying amounts should be considered as indicative of a reaction. The control eye should, of course, remain normal.

Sometimes reactions occur following the instillation of the sensitizing disc, with no further evidence of a reaction subsequent to the instilling of the diagnostic tablet. With observations following only the second instillation, those cases would, of course, be overlooked. However, I believe them to be comparatively rare, and the great majority of reactions to the first disc will repeat the reaction to the second disc. If observations are made after the first instillation, this should be done from the eighth to the fifteenth hours.

After the diagnostic tablet has been instilled, the period of observation should be initiated at the second or third hour and continued every two hours until the twelfth or fifteenth hour, when, if no reaction is evident, the animal may be classed as apparently free from tuberculosis.

As far as I can learn, no code for the reporting of ophthalmic reactions has been officially adopted. If a simplified one were asked for, I should offer the following with the word "exudation" represented by the letter "X," which is phonically suggested by the first syllable. The word designating the amount of the mucopurulent exudation would be represented by its initial letter, while lacrimation and hyperæmia should be similarly signified, thus:—

Lacrimation, L
Hyperæmia, H
Slight exudation (2 to 4 minims), SX
Marked exudation (5 to 10 minims), MX
Extensive exudation (more than 10 minims), EX.

All animals exhibiting less than SX would be classed as suspicious, with its implied subsequent procedure.

All animals presenting SX or more would be classed as reactors.

The Intradermic Test.

Let us now consider the intradermic method, the official recognition of which, to my mind, represents the greatest single advance thus far made in the eradication of bovine tuberculosis. It has given us an efficient and a speedy instrumentality with which to accomplish that work. Granted its efficiency, which cannot be successfully questioned when it is properly applied and similarly interpreted, and the greatly increased number of cattle which can be tested in the same length of time, the stupendous problem of tuberculosis eradication in the United States loses some of its staggering proportions.

The intradermic injection is made as its name implies. The site of injection is in either of the subcaudal folds or in the immediate vicinity, where the skin is soft and pliable. A 2 c.c. syringe with a curved or straight needle or a Schimmel dental needle may be used.

The Bureau supplies an especially prepared intradermic tuberculin containing 50 per cent. of concentrated old tuberculin. From 0·1 to 0·2 gramme of this tuberculin

in injected, as just explained. Most operators agree that the site of injection should be visibly clean, without the use of possibly irritating disinfectants. In this State in our efforts to reduce the number of shot-like formations which sometimes occur after injection, but to which we attach no significance with reference to a reaction, we have used tincture of iodine with perhaps uncertain results; however, desquamation was noted in practically all cases, due, of course, to the application of the above-mentioned agent.

If two observations are made, they should be noted at the forty-eighth and ninety-sixth hours. In case of one observation only, it should be made at the seventy-second hour.

According to recently adopted regulations directed toward uniformity in the reporting of the character of intradermic reactions, the following criteria are given:—

Negative, N.

Hard circumscribed swellings, pea size (3-16 inch), P2, P3, P4, etc.

Soft diffuse swellings, twice the thickness of the normal fold, Thick 2X, Thick 3X, etc.

Efficiency on the part of veterinarians in making the intradermic injection can be acquired through observation and practice. The policy of instruction in this method should be carried out as in the case of the subcutaneous or ophthalmic method. In the interpretation of the results of the intradermic injections the instruction given will be at least equally valuable, for a loss of the wonderful advantages of the intradermic method is experienced if the evident reactions are ignored.

It has been said by some that the typical swelling is, as a rule, hard and circumscribed. By such consideration a tendency to leave evident reactors in a herd would be created. I prefer not to name any one sort of swelling as typical. My experience has served only to encourage the policy of classing as reactors all animals presenting visible or palpable swellings following an intradermic injection. Why should there be an infiltration into the subdermal tissue, of greater or less extent, unless it be indicative of a reaction to the agent employed on the part of the organism affected? It should be remembered that intradermic reactions are not always indicated by the same character of swellings, that there is no one characteristic tumefaction with reference to this method. Therefore I should counsel against having in mind some definite character of swelling as indicative in determining a reaction.

In the application of the intradermic test one should not lose sight of the importance of feeling the condition of the subcaudal folds at the time of injection. Know the normal feeling, then you will recognise the abnormal feeling. This is an essential feature in the determination of a reactor. If at the time of injection any abnormality of the skin under the tail is observed, the character of the condition should be noted, with the identity of the animal. And finally, when a reaction appears, eliminate that animal from the herd.

The Practitioner Recognised.

The following paragraphs, taken from the accredited herd regulations, refer to the practitioner who may be on the Bureau and State list of approved veterinarians for tuberculin testing:—

"When a herd has been officially accredited by the United States Department of Agriculture and State, it shall be, when ordered by the livestock sanitary officials of the State, tuberculin tested annually by any veterinarian whose name is upon the accredited list of veterinarians, approved of by the United States Bureau of Animal Industry, provided that before any veterinarian, other than one who devotes his entire time to the work of any State or the Bureau of Animal Industry, can be approved for accredited herd work, he shall have passed an examination conducted by the proper livestock sanitary officials of the State in which he resides, and the Bureau of Animal Industry. He then shall be eligible to conduct annual tuberculin tests upon herds which have been officially accredited, upon dates approved of by the proper State livestock sanitary offcial and the inspector in charge of the Bureau of Animal Industry in the State wherein the herd is located.

"No herd tests can be made by such an approved veterinarian unless he has instructions in writing from the State officials to that effect. The date of the annual tests for each herd shall be recorded in the State office and also in the office of the inspector in charge. On any annual test the State and Bureau reserve the right to have a regularly employed official present on the farm to supervise the testing done by the approved veterinarian.

"The approved veterinarian shall conduct each test strictly in accordance with the instructions issued by the Bureau of Animal Industry to employees engaged in co-operative tuberculosis eradication work. At the conclusion of each test the approved veterinarian shall submit to the State Veterinarian and the inspector in charge of the Bureau of Animal Industry a copy of the record of the test.

"Any animal of a herd under supervision which may react in any herd tuberculin tested by an approved veterinarian shall be marked for the purpose of identification in accordance with the regulation of the State in which the animal is located.

"Tuberculin tests applied by veterinarians, other than those regularly employed by the State and the Bureau of Animal Industry, shall be paid for by the owner of the herd."

Instructions have been issued by the Bureau of Animal Industry with reference to the examination for recognition by the State and Federal authorities as qualified veterinarians for the tuberculin testing of accredited herds, and the places at which it will be held. All practitioners appreciate the value of practical experience as an essential supplement to correct theory, and I am confident they will look with favour upon any effort made by the State and Bureau to extend to them their assistance with reference to the application and interpretation of the tuberculin tests. The State and Bureau solicit the interest and hearty co-operation of every qualified veterinarian, and need both, too; and upon the extent to which he manifests these requisites will depend very largely the attainment desired by all—the eradication of bovine tuberculosis.

[*The Accredited Herd Plan, the Tuberculin Tests, and their Relation to the Practitioner.* Dendinger, W. C., *Jnl. Am. Vet. Med. Assoc.*, 1921, Aug.]

Extraction of Hypoderma Larvæ.

It has generally been conceded by veterinarians, entomologists and others that the extraction of warble larvæ from the backs of cattle should be recommended to farmers. The benefits from the point of view of lessening the numbers of the parasites are obvious and cannot be denied. As each warble fly may deposit several hundred eggs, every larva destroyed means much toward lessening the evil.

In 1916 the writer (1) called attention to the fact that the proteins contained within hypoderma larvæ had toxic properties when injected into susceptible animals; that they produced marked symptoms and in some cases fatal results. In 1917 Hadwen and Bruce (2) published a full description of the experiments. The co-operative work accomplished in Denmark in the removal of hypoderma larvæ has been referred to many times in the writings on warble flies, and it would seem opportune to review two of the latest papers on the subject. In a general way these papers show that the extraction of warble larvæ is not without its attendant dangers. To the writer it seems clear that Danish veterinarians have only just lately recognised the fact that a disease they designate as rosenfeber may follow the extraction of the larvæ.

Laust Brodersen (3), 1919, writes a very clear and concise paper on his observations made in a farming community in Norre Nebel, Denmark. He describes a disease in cattle which has some similarity to urticaria

and which he calls rosenfeber. The affection is found during the spring and summer, and the cases are reported as occurring during the daytime or evening. Briefly the symptoms are noted as follows:—

Fever is present, the pulse is full, the jugulars are distended. Tremors are noticed, especially of the lips, and the animals are restless and unruly. Œdemas are the rule; the eyelids, muzzle, submandibular region, occasionally the udder, the anus, and vulva are affected. Tears drop from the eyes, mucus from the nose, and there is frothing at the mouth. Breathing is laboured and accompanied by a hissing sound. There is slight tympanites, and rumination is irregular. The fæces are thin and are discharged frequently. The treatment consists of bleeding, cold applications and febrifuges. The disease is acute, usually running a benign course.

In 1914-15 Brodersen saw many cases of rosenfeber in cattle following the extraction of the larvæ. He gives notes on seven cases which he treated. They occurred from April 20th to May 31st. He also treated three cases in May, June and July where no larvæ had been extracted. In these latter cases he wonders if the larvæ had not been accidentally injured, and says that if this is the case, rosenfeber is a sickness caused by the absorption of poisonous material from the larvæ, or, more likely still, to the foreign albuminous material in the larvæ, and that if this theory is correct, "the disease must be related to the so-called serum sickness." Brodersen does not mention any fatal cases.

In my preliminary note, and in the subsequent paper with Bruce, fatal cases were described following the injection of warble juices. Several additional symptoms and lesions were described, such as coughing, bleeding at the mouth and anus, irritation of the skin, and a cyanosed appearance of the body. After the death of the animals, which was due to asphyxia, the blood remained incoagulable. These fatal doses may occur naturally, and if so, it is unlikely that veterinarians would have seen them, as death occurred in a few minutes.

As soon as the findings recorded by Brodersen were understood by most of the farmers, he states that they became frightened and completely stopped the practice of extracting the larvæ. He believes that the people who were paid to perform this work could not do so without damaging some of the larvæ, as they made only three visits to each herd during the season. The farmers were advised to undertake the work themselves.

Professor C. O. Jensen, 1919, reviews Brodersen's paper and recalls an experiment which he made on a calf sixteen years previously. This animal was injected with the juice derived from two small hypoderma larvæ. In from one-half hour to two hours it developed symptoms suggestive of rosenfeber. An immense œdema of the eyelids and the anus occurred, also of the connective tissues elsewhere. Professor Jensen suspected rosenfeber, but did not like to call it so on account of its occurrence at the wrong time of the year. Now that Brodersen has published his observations, Jensen says that it is very probable that all cases of rosenfeber are in some way or other connected with hypoderma larvæ. Jensen argues that the toxic material acts like a lymphagogue of a transient nature. He writes at some length on the œdemas found surrounding the larvæ in the gullet, and believes that they are not inflammatory, though Koch and De Vries consider that they are so. If the œdemas are permanent, they should produce clinical manifestations of their presence.

Jensen further states that during the past years no clinical observations have been brought out which would argue against the transient nature of the disease, with the exception of a single case of tympany. In this connection he mentions an interesting report by De Vries. A young animal, after feeding, suddenly became unable to swallow and was vomiting. A sound was introduced into the œsophagus and difficulty was experienced in forcing it through the posterior end. A diagnosis of stenosis was made, probably due to a foreign body. The animal was slaughtered, and in the posterior part of the œsophagus a number of hypoderma larvæ were encountered together with œdemas of the submucosa. No foreign body was found and no injury to the œsophagus. Professor Jensen concludes that it is likely that a number of such cases have been misinterpreted in practice.

Jensen (4) says also: "The extraction of hypoderma larvæ has been considered rather safe hitherto. In circulars issued by the German Imperial Health Department it is stated that there is no need to be afraid of injurious effects following the extraction of the larvæ. From different sources, however, it had been learned that urticaria might occur. Schottler saw urticaria following in cases where the larvæ had been punctured and then squeezed out. He also said that by this method of treatment serious suppuration may follow. But as far as I know, no one has previously observed that the extraction may be followed by rosenfeber or similar disease."

The symptoms connected with Jensen's experiment which he saw after the injection he considers came on too rapidly for the albumen to be the toxic element responsible for them. In this latter statement no doubt Jensen is wrong. The time he gives of one-half to two hours for the symptoms to develop is very much longer than necessary in most cases when injections are made. In the 1916 experiments we found that in the fatal cases the results were immediate, and in the non-fatal they generally came on in a shorter period than half an hour. In some more recent experiments conducted on ten calves, the three animals which gave marked reactions showed symptoms in fifteen to twenty minutes.

Jensen's idea that the swellings in the œsophagus are transient is correct in a sense, and Hadwen and Bruce have shown that the larvæ move away when surrounded by œdema. But they still remain in the œsophagus, consequently the reaction against them still goes on, though the situations of the swellings may change. The question resolves itself largely on the degree of resistance on the part of the animal as to whether the swellings are large or small (5).

Conclusions.

The disease called "rosenfeber" in Denmark appears to be identical with hypodermal anaphylaxis. The reader is referred to articles which have appeared in this journal on this subject.

Squeezing out hypoderma larvæ from the backs of cattle is a good method for lessening the numbers of warble flies and has been attended with considerable success in Denmark. However, to avoid unfavourable after-effects in the animals, the extraction of the larvæ must not be undertaken hastily, nor must rough methods be used. Above all the larvæ must not be injured in the process.

The walls of the sac in which the larva lies are in the nature of a defensive barrier. This sac, in addition to holding the larva, contains pus cells and bacteria in many cases. It may also hold toxic material excreted by the larva. Therefore if the walls are lacerated a variety of reactions may take place. Softening the skin first with water and then squeezing the warble sacs should remove most of the larvæ. In cases where a larva cannot be extracted by this method a round-ended pair of forceps might be used to stretch the opening and to assist in drawing it out. After the larva has been removed, the cavity should be flushed out with clean water. In the cases where a larva has been ruptured accidentally, the parts must be washed quickly to dilute and remove the toxic material.

The co-operative work in connection with the extraction of warble larvæ in Denmark had in 1919 been going on for some years, apparently without any drawbacks. At this late date, however, the Danish veterinarians and subsequently the farmers have discovered that troubles may follow what they thought was a perfectly safe practice. It would seem evident that the work was under-

taken without a sufficient number of properly-controlled preliminary tests.

It must not be thought, however, that the Danish veterinarians are to blame for not having foreseen or recognised the danger in removing the larvæ. The profession generally considered that the extraction of the grubs was simply a mechanical piece of work and was quite without danger to the host. When the co-operative work began in Denmark the dangers from hypoderma were unknown.

The point the writer wishes to establish is that other countries should profit by Danish experience. He still favours the extraction of the larvæ (and has so stated elsewhere), but he believes that before laymen are advised to undertake it in a wholesale manner further tests must be made.

The symptoms of anaphylaxis are so striking, though the disease is as a rule without danger of fatal results, that to a farmer it appears to be a serious matter. The cases which have been reported so far are few in number, but now that attention has been called to them, they may be found to be more common than was supposed. It is for this reason that careful tests should be made to settle this point.

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Swedish State Veterinary Bacteriological Institute.

TENTH ANNUAL REPORT.

This report, which includes an account of the work of the Swedish State Veterinary Bacteriological Institute during the first decade of its existence, states :—

"The King-in-Council and the Riksdag having determined, on the 17th June, 1908, the establishment, on the Extraordinary Budget, of a Veterinary Bacteriological Institute, the Instructions for the Institute were confirmed on the 2nd October, 1908. There was, at first, a question whether the Institution should not be domiciled in the buildings of the old Veterinary Institute, but for several reasons this proposal was negatived, and it was resolved to wait until the new Veterinary High School Buildings were ready in 1911. The Principal was appointed on the 18th June, 1910, and he began his duties on the 1st January, 1911. Although the Institute is not subordinate to the Veterinary High School but to the Royal Medical Board, and although its budget is separate from that of the said High School, economy led to the Institute being lodged on the premises of the High School. It was given scarcely one-half of the ground and basement floors in the High School building for bacteriology and pathological anatomy, together with a little stable with six stalls for horses and two for cattle. When the Principal began his duties, it proved that a sum of 14,818 Swedish crowns (about £800) was still wanted for the equipment of the premises, and the Government had to be asked for the amount. To allow of the Institute being, in some degree at least, able to begin its work during 1911, it proved necessary to employ some means that were disposable in order to equip one part of the premises thoroughly, while the other part was allowed to remain idle for the time being. From the 1st November, 1911, some work was carried on in a couple of rooms situated in the old Veterinary Institute, but on the 20th of the same month the Institute began its work on the above-mentioned premises. The grant applied for in order to complete the equipment was voted by the Riksdag of 1912, but it was not before the December of the same year that the resolution was come to respecting the disposal of the sum, so that it was impossible to fully equip the Institute's premises before 1913.

"The scientifically-trained staff consisted during the first five years of the Principal and a Laborator alone. The total grant for 1911 was 22,000 Swedish crowns (£1,230). During the next few years the grant was increased a little. In 1914 the Royal Medical Board applied to the Government, in order to have the expenses of the Institute paid out of the Ordinary Budget, stating, *inter alia*, in its application as follows: 'The experience gained during the period that has elapsed since the starting of the Institute in 1911 has undisputably demonstrated that the establishment fills a real need. Its activity has steadily increased during the past years, and the results have been successful. Everything points to this Institute now being absolutely indispensable to its purpose, so that there should exist no doubt as to the suitability of giving it a more stable form by placing it on the Ordinary Budget.' The application was granted the following year by the King-in-Council and the Riksdag, and the annual grant was fixed at 42,700 Swedish crowns (£2,900), of which sum 18,400 crowns (£1,020) was assigned to salaries and fees. A new assistantship was established at the same time. New instructions were issued on the 19th November, 1915.

"In March, 1915, the post of Laborator became vacant. In consequence of the low salary, no competent applicant appeared when the position was declared vacant, and a temporary assistant had to be engaged until the close of 1919, this, of course, causing serious inconvenience.

"New tasks continually arose for the Institute, however, and its activities increased rapidly, so that the staff soon proved quite insufficient. Temporary relief in this respect was gained by the appointment of extra assistants and by the voting of additional grants for 1918 and 1919. The Government laid before the Riksdag of 1919 a Bill for an increased grant from the Ordinary Budget for the State Veterinary Bacteriological Institute. The Bill was passed by the Riksdag on the 11th June and came into operation from the beginning of 1920. This signifies a great advance for the Institute. The ordinary annual grant was increased to 77,000 crowns (£4,000). The Laborator's salary was increased. The permanent staff was increased by the appointment of a laborator, an assistant, a serum controller, a stable foreman, a first caretaker and two women assistants. The laboratory work proper was divided into two departments: one, diagnostic, chiefly for bacteriological and pathologic-anatomical work, and the other a serological, mainly for sero-diagnostical investigations and the production of tuberculin, mallein, sera and vaccines. The instructions were altered in accordance with this change on the 16th January, 1920. The sera and vaccines produced at the State Veterinary Bacteriological Institute have always been tested for sterility before being despatched from the Institute. Since the 1st May, 1917, there has been employed a special serum-controller, whose task is to test, as far as possible, the effective value of the sera. As already mentioned, this official was made one of the permanent staff from the beginning of 1920. In addition to the above-mentioned task, the serum-controller is also bound, when requested by the Royal Medical Board, to examine the sera and vaccines produced by other Swedish or foreign establishments.

"The work that was first begun consisted *of diagnostical investigations of bacteriological and pathologic-anatomical nature*. As a rule, these concern cases of diseases that are suspected to be infectious. The material is sent in by veterinary surgeons or cattle owners. The number of such investigations has increased fairly evenly year by year, from 480 in 1912 to 1,551 in 1920. (A graphic representation of the development in question and of that of several other of the establishment's branches of work is reproduced with the report.)

"When cows are suspected of being attacked by *tuberculosis of the udder*, veterinary surgeons and cattle-owners are bound to send milk samples from the animals in question to the State Veterinary Bacteriological Institute to be tested for tubercle bacilli. If such bacilli are discovered in the milk, the fact is reported to the Royal Medical Board: the cows are slaughtered and the owner is indemnified by compensation made by the State. More than 1,200 such investigations, not included in those above-mentioned, were made in 1911. During the Great War the number of yearly testings for tuberculosis of the udder fell to 341 in 1918, from which date it again began to rise, reaching 590 in 1920.

"A Royal Proclamation of the 22nd February, 1916, orders all horses and asses imported into Sweden to be examined, while they are in quarantine establishments, by means of the ophthalmic mallein test, in addition to which, a blood-sample has to be taken from the horses for *serological examination for glanders* at the State Veterinary Bacteriological Institute. The plan of this work has been drawn up in detail at the Institute. The production of mallein and antigen for serological glanders diagnostic had been begun the year before. In the serological investigations, there are employed in every instance both the agglutination and the fixation of complement tests, or, instead of the latter, the conglutination test, when the sera themselves fix the complement, as is usually the case with sera from asses. These examinations began in March, 1916, during which year 438 blood samples were sent to the Institute. In consequence of the increase in the number of horses imported, the number of such blood-tests yearly has since increased. During 1920 there were 2,347 samples examined in the manner just described.

"*Serological examinations*, by means of agglutination and fixation of complement have been employed since 1912 *for diagnosing infectious abortion in cows*. The number of such blood-samples tested has risen to 791 in 1920. The intention has not been, in carrying out this work, to discover, by means of the examination of entire herds, the animals that can be suspected of being infected, in order, guided by this, to take measures to prevent the spread of the infection. The practical difficulties in the way of doing this have proved to be too great, so that the only aim has been to be able to state whether the abortion appearing in any certain herd has been occasioned by Bang's abortion bacillus or not, and for this purpose it has proved sufficient to examine blood-samples from a few animals. The number given for 1920, therefore, represents the investigations made in the case of a couple of hundred herds of cattle.

"In connection with the above-mentioned examinations, there began in 1915 experimental *vaccination for infectious abortion in cattle* in accordance with a method elaborated at the State Veterinary Bacteriological Institute. The vaccine was distributed for two years free of cost. The results obtained were promising. From 1917 the demand for 'abortion-vaccine' became more and more lively, and during 1920 vaccine was supplied for about 10,000 animals. After vaccination in infected herds, only about 10 per cent. of the cows have aborted.

"In consequence of representations from the Agricultural Society of the province of Norrbotten, comprehensive and systematic measures have been taken since the autumn of 1917, under the direction of the State Veterinary Bacteriological Institute and with the support of State grants for combating infectious abortion of cattle in the said province. The measures have consisted in discovering the infected herds by means of serological examinations, and in vaccination and disinfection, together with instructive lectures on the subject in various parts of the province. The disease, which was widely prevalent when this work began, has since decreased most essentially.

"At the beginning of 1920 there was found, on examination at the Institute, *infectious abortion in horses, caused by paratyphus bacilli* existing in Skaraborg province, one of the most successful horse-breeding districts of Sweden. The disease had spread very extensively, but vigorous measures were taken, in accordance with a plan elaborated at the Institute, for confining the outbreak within the strictest limits possible, and this with success. The struggle against the disease has consisted chiefly of serological examinations in infected and suspected herds. No less than 4,618 blood-samples were tested during 1920, and 262 herds had to be considered as infected by paratyphus-abortion. Polyvalent paratyphus vaccine has been produced and also employed. The result of this vaccination cannot be judged of until the close of the present foaling period.

"*Autogenous vaccine* has been produced in increasing quantity since 1917 for use in local morbid processes, especially in skin diseases caused by strepto- and staphylococci. In most instances, the result has been extremely satisfactory.

"The *production of serum* began in 1912 on a very small scale. It was coli-, paracoli- and pyogenes sera that were made for prophylactic purposes in certain diseases of calves. In 1914 the list was increased by serum against swine erysipelas; in 1916 pasteurella sera against swine-plague and septic pneumonia in calves, and antistreptococcic serum against strangles; in 1917 serum against the infection of wounds caused by strepto- or staphylococci, and, in 1918, petechial fever serum. The sera that have been most in demand are those against swine erysipelas and wound infections. All supplies of serum are despatched after application from a veterinary surgeon, and, as a rule, they are sent direct to the estate where it is to be used. In 1914 the total amount sent was 32,465 cub. cm. sera. Four years later, or in 1918, the corresponding quantity was 324,072 cub. cm., *i.e.*, ten times the amount first-mentioned, and, in 1920, or only two years later, the supply of serum sent was 740,899 cub. cm., *i.e.*, 23 times more than six years previously.

"A Royal rescript, renewed every year, instructs the Institute to supply the Board of Agriculture with that amount of *tuberculin* which may be necessary for combating tuberculosis among cattle. The quantity in question, which, consequently, is independent of measures taken on the part of the Institute, has not increased, but rather the opposite. In 1920 there was sent to the Board of Agriculture a total of 35,000 cub. cm. tuberculin.

"According to the instructions governing the work of the Institute, the establishment has also 'by means of well-planned and carefully carried out experiments—not only at the Institute, but also in collaboration with practical farmers—to endeavour to gain an insight into those methods that should be adopted in order to carry on the struggle against the different cattle diseases with the greatest prospect of success.' Among the more comprehensive of such experiments which have not been spoken of above, mention may be made of the investigations respecting anæmia in horses, malignant catarrhal fever in cattle, and infectious sheep diseases introduced into Sweden by means of the import of breed animals during 1919. In consequence of an application made by the Kristianstad Provincial Association for combating cattle tuberculosis, the Institute has undertaken, since 1912, on certain conditions, to carry out the microscopical examinations and the experimental inoculations necessary for the Association's endeavours to combat tuberculosis, guided by clinic-bacteriological diagnoses.

"Journeys abroad on official business have been undertaken by the Principal: in 1911 to Denmark and Germany; 1913 to Germany, Austria, Hungary, Italy and Switzerland; 1913-1914 to The Argentine (Uruguay, Brazil), England and Holland; 1915 to Norway; 1916 to Germany, Austria and Hungary; and in 1920 to Germany.

"The Institute's officials have also carried on *educational work*. The Principal, by special instructions of the Royal Medical Board, gave lectures in 1913 on bacteriology and serology to older veterinary surgeons; gave instruction in the same subjects in 1912, 1916 and 1920, during the training courses for candidates for the post of Provincial Veterinary Surgeons, and, in accordance with the instructions of the Medical Board of the Royal Military Administration, taught the theory of epizootics, bacteriology, etc., at the training courses for battalion veterinary surgeons

in 1918 and 1919. The instruction in bacteriology for students at the Veterinary High School has been given by a Laborator of the Institute. As the establishment has no premises for teaching purposes, all the courses have been given in the pathological-anatomical section of the Veterinary High School. Veterinary surgeon candidates, two at a time, have been given the opportunity, for short periods, to assist in the laboratory work. Information respecting the work carried out by the Institute has been spread by means of lectures at congresses, meetings of veterinary associations, and on similar occasions.

"The scientific staff has, for its own instruction, met monthly to discuss the latest technical veterinary publications.

"*Publications* have been issued in three series: 'Annual Reports,' and 'Communications' (*i.e.*, scientific works of general interest for veterinary surgeons), and 'Popular Papers,' richly illustrated, intended for distribution on a large scale among the cattle-owning public. By the mediation of the Royal Medical Board, these works have been sent gratis to all veterinary surgeons in the kingdom. In addition, there have been issued several publications which do not form part of the above series. Under more favourable circumstances, the investigation material—which, from a scientific point of view, is very valuable—could have been utilised better, but, as it is, the scientific work has been restricted by the extremely comprehensive current business. In addition, the establishment was understaffed until 1920 as, in consequence of their low salaries, the Laborators and their assistants were unable to remain long at their posts. They have, too, been young veterinary surgeons or veterinary candidates who have had first to be trained at the Institute before they could think of scientific production. A summary of the publications will be found on p. 36. For various reasons, however, several rather important investigations have not appeared in print, such as the P.M. of the 13th May, 1918, to the Swedish Reindeer-grazing Delegation, the origin of which was the proposal made by the Norwegian Reindeer-grazing delegates for a Swedish-Norwegian agreement respecting the measures to be taken on the appearance of infectious diseases among reindeer.

"To be able to carry out the many practical tasks that fall to the lot of this Institute, it has been our endeavour always to stand in close connection with veterinary surgeons and owners of animals throughout the Kingdom. That we have succeeded to the degree we have is the result, to a certain extent, of the Institute itself having been the distributor of its sera and vaccines, for very frequently, on replying to interrogations respecting the character of a disease, advice is also given as to the choice of such sera or vaccines, together with proposals for the adoption of other measures suitable for employment. In this manner there has developed extensive consultative work. Correspondence with official authorities has also extended very greatly. In 1911 we received 28 communications from official authorities; in 1915 this number rose to 67, and in 1920 to 290, while those sent to such authorities numbered—in 1911, 1915 and 1920—94, 293 and 443 respectively.

"The space available at the Institute was, as the Principal pointed out immediately after beginning his duties, very little from the start. The small stable, with six stalls for horses and two for cattle, proved insufficient the very first year. For several years, however, the Institute managed to get along by hiring stalls from the Veterinary High School, but, at times when the High School itself needed all the stall-space it could obtain, such as during the prevalence of contagious pneumonia, it has been exceedingly difficult to find a place for serum horses, in addition to which there was always the danger of infection. Since the 1st October, 1916, the Institute has hired stalls at an old rectory-farm, Satra, in the parish of Danderyd. The estate, which embraces 56½ acres open land in addition to woodland, enjoys an isolated position at Edsviken, about six miles from Stockholm. It was taken on lease from the 1st April, 1917, and has since been managed by the Principal, with the first caretaker as the immediate manager. The latter has devoted great and unselfish interest to the farm. No special grant has been asked for in respect to the hiring of the farm or its management. When it was taken the surveyor's report stated it was much neglected. A survey made in 1919 and an inspection by the Royal Medical Board in 1920 shows that this is no longer the case, and that the farming of the place has considerably improved. The possession of this farm has been of the greatest importance to the Institute, which has been able to keep 15 horses there, in addition to some cattle and smaller animals. In 1920 the Principal asked that the farm might be purchased, so as to be able to utilise to the full the advantages it offers. In addition to the farm, the Institute has continued to hire stalls for some ten horses at the Veterinary High School. The laboratory premises, too, have for some years past proved to be too small, and as the work there continues to increase, there is a danger that it will be stifled for want of room. In 1917 two rooms were taken on the ground floor of No. 131 B, Birger-Jarlsgatan, a house only ten minutes' walk from the Institute, and these have been equipped as laboratories. The serum-control and mallein-production departments have been located on these premises, and there is a hope that it will be possible to hire some more rooms in the same house. In accordance with instructions from the Government, the Institute was to have taken measures, from the beginning of 1920, for the bacteriological inspection of meat, but the matter has been put off in consequence of the want of premises. It was intended to locate this branch of work in the new premises just mentioned, together with other work which, it was considered, could be removed from the Institute proper without any very great risk. Most branches of the work, however, will have to remain where they are being carried on at present, so that the hiring of premises will not be able to altogether make good the existing want of space. The premises of the Veterinary High School do not allow any further extension of the space occupied by the Institute, and under these circumstances, the Royal Medical Board, at the instance of the Principal of the Institute, has urged the necessity of new buildings for the State Veterinary Bacteriological Institute. The Board of the Veterinary High School, together with that institution's teaching staff, having been requested to report on the matter, have stated that the High School itself needs the rooms now occupied by the Institute, and they confirm the statement that the problem of finding premises for the Institute can only be solved by the erection of special new buildings. It would be best if these were erected in the immediate neighbourhood of the High School, so that this establishment, too, would in the future be able to profit by collaboration with the Institute which has proved to be 'of great importance, both for the teaching and the scientific work at the High School.'

"As was mentioned at the beginning of this survey, the first annual grant enjoyed by the Institute amounted to 22,200 Swedish crowns. At present it receives 77,000 crowns. It was not before 1915 that it gained any income by the sale of sera and vaccines. The amounts charged have been approximately the same as the cost of production. The income derived from this source has increased very considerably. It amounted in

1915 to	.....	1,714	Swedish	crowns
1916 „	.....	8,365	„	„
1917 „	.....	17,016	„	„
1918 „	.....	15,591	„	„
1919 „	.....	47,777	„	„
1920 „	.....	109,398	„	„

(£1 = ca. 18 Swedish crowns).

"In 1911 the annual State grant amounted, as we have said, to 22,200 crowns, and the Institute had no private source of income. In 1920 the grant and the income from its own resources gave the Institute altogether 238,815 crowns (£14,500). During the course of the year considerable purchases had been made; among other things that of 31 horses. In spite of this, after the deduction of deficits under several headings, there remained at the close of the year a profit of 41,572 crowns (£2,500), which was carried over to the accounts for the

present year, when it will certainly be well needed; *inter alia* for the equipment of the above-mentioned premises which had to be hired in order to provide, provisionally at least, fairly spacious premises for the Institute's work which, at the present time, has grown to quite extensive proportions."

Clinical and Case Reports.

The Editor will be glad to receive from members and others contributions to this column of reports of interesting cases

Fracture of the Os Pedis in a Mule.

By E. S. W. PEATT, Captain R.A.V.C., Constantinople.

Subject.—Brown gelding mule, aged 9. Height 14-1.

History.—This mule, along with some others, was tied to a long iron bar, held by staples in the stable wall. One night the mules pulled the bar down and immediately afterwards this mule was found standing on three legs.

Symptoms.—The mule came into hospital by ambulance on 15th December, 1921, the morning after the accident. He was very lame in the off fore-leg, carrying the limb and refusing to place any weight on it.

The shoe was removed and the foot examined, the animal flinching when the sole or wall was tapped with a hammer. Locally there was some heat in the foot and coronary band but no swelling. General symptoms of pain were very marked, *i.e.*, profuse perspiration, very fast hard pulse, temperature 102·4, respirations hurried, anxious expression and general uneasiness, the mule lying down and rising frequently and refusing to feed.

Diagnosis.—Fracture of second or third phalanx, probably the latter, as there was no swelling at the coronary band.

With the idea more of observing the action of the drug in such a case than of giving temporary relief to the patient, I injected 5 grains of cocaine hydrochloride, 2½ grains over each plantar nerve of the affected limb. In 15 minutes' time the mule ceased sweating, began to feed, his pulse slowed down, and he became quite normal and commenced to rest the toe of the affected foot on the ground. In another five minutes he was resting his sound leg and standing with all his weight on the affected foot, which proved afterwards to have the os pedis fractured very badly in three places. For about 50 minutes the patient was quite normal, and then gradually the symptoms as previously described returned.

Treatment.—Hot fomentations were applied to the pastern and hoof, and the mule put in a well-bedded loose box.

Result.—After 24 hours the general symptoms had abated, and in two days' time the mule had no symptoms of pain generally, but still did not allow the affected foot to touch the ground.

At no time was there any perceptible swelling at the coronary band.

On 5th January, 1922, a mild blister (hydrarg. biniodi, 1/12) was applied to the coronet.

On 27th January, 1922, there being no improvement, the mule was destroyed.

Post-mortem.—The os pedis was found to be fractured. The fracture started as a single fissure at the posterior border of the articular surface, dividing into two branches, just in front of the pyramidal process. These two cracks traversed the anterior wall in a remarkably symmetrical manner.

The fractures were right through to the solar surface of the bone.

The points of interest in this case are: (1) The remarkable regularity of the fracture, the fissures in the bone on each side of the middle line being exactly similar. (2) The complete anæsthesis of the foot caused by the injection of cocaine over the plantar nerves, the loss of sensation being so absolute as to enable the animal to stand with all his weight on a bone fractured in several places.

Deferred Pyæmic Umbilical Infection.

By W. L. RICHARDSON, M.R.C.V.S., Wadebridge.

Subject.—A well-developed four-year-old shire colt in good condition. He had been in present owner's possession about 12 months; his previous history was unknown.

Symptoms.—On April 8th I found this animal very distressed and fevered. Temperature 105°F.; pulse 70. In the region of the umbilicus there was a diffuse painful swelling about the size of a dinner plate.

Treatment.—I ordered hot fomentations locally, followed by an anodyne liniment, and gave nuclein hypodermically and ℥i. antifebrin every six hours.

Course.—Next day he was much brighter and feeding. Temperature 102°F., and abdomen not so tucked up.

On April 10th the condition was, however, worse. Temperature 106° F.; pulse 80. Respirations rapid. He was evidently in a good deal of pain, and was very lame on both fore-legs, but I could not ascertain the seat of the lameness. The umbilical swelling was much smaller, and I found a fluctuating centre, which I opened, evacuating a small amount of thin offensive pus. I treated umbilical wound with antiseptics and repeated nuclein and antifebrin.

Next day (April 11th) colt brighter again. Temperature dropped to 103·5, and he was feeding a little.

On April 13th the near hind leg was very much swollen from the thigh downwards—a doughy, not a painful swelling. Temperature 105; pulse 90 to 100, and very distressed. He died the same night.

Post-mortem examination.—Revealed an acute generalised peritonitis. In the region of the umbilicus was an area about the size of a saucer, containing necrosed broken down tissue, partly destroying the abdominal wall and apparently the walls of an old abscess. The other abdominal organs and the lungs all showed signs of an acute septicæmia. In the near fore-leg in the sesamoid region I found a dark spot about the size of half-a-crown, containing an amber-coloured fluid—no doubt a metastatic lesion. I failed to find anything abnormal in the other fore-limb.

One hind leg was very swollen, with an amber-coloured jelly-like material under the skin. The muscles were pale in colour and friable, as if boiled, and in places emphysematous.

Remarks.—The case is interesting to me on account of the time which elapsed from the time the colt actually became infected to the time when the acute symptoms of the disease manifested themselves.

Association Reports.

Southern Counties Veterinary Society.

ANNUAL MEETING.

The thirty-eighth annual general meeting of this Society was held at the Royal College of Veterinary Surgeons, 10 Red Lion Square, London, on Thursday, March 23rd, when the retiring president (Mr. J. W. McIntosh) took the chair and the others who signed the attendance book were Professor G. H. Wooldridge and Messrs. J. T. Angwin, E. Whitley Baker, F. Bullock, C. Pack and A. C. Wild. Apologies at inability to attend were announced from Major Hobday, Colonel Simpson, and Messrs. G. P. Male, Sampson and J. B. Tutt.

Previous to the general meeting, there was a meeting of the Council, at which the Hon. Secretary's report and the Hon. Treasurer's statement were submitted, and various accounts were passed for payment.

The minutes of the last meeting, as published in the *Veterinary Record*, were, on the proposition of Mr. PACK, seconded by Mr. WILD, taken as read and confirmed.

The HON. SECRETARY also made reference to the sad loss they had sustained since the last meeting in the death of one of their keenest members and most regular attendants. He referred to "dear old Mac." They all regretted his death and it was sad to think they would never see him again, and he suggested that before they proceeded any further with the business of that afternoon they should rise for a few moments' silence to his memory.

This suggestion was at once agreed to.

The HON. SECRETARY, continuing, said he was sorry to have to announce the resignation of four of their members: Captain Rees-Mogg, Captain Leeney, Colonel Simpson and Mr. G. H. Livesey.

The PRESIDENT: I am sure we are all very sorry to hear that.

Mr. PACK: Do they give any reason?

Mr. ANGWIN: None of which I am aware.

Mr. PACK suggested that they should ask the Hon. Secretary to communicate with all four of these gentlemen and ask them to reconsider their resignations.

The PRESIDENT: I am afraid we can hardly expect Captain Leeney to continue his membership, as he is no longer in our district, and it appears also that Captain Rees-Mogg's decision is final. With regard to Mr. Livesey's resignation, I am a little disappointed with the support he has given me since I entered the chair. There may of course be reasons, but I do feel it rather. I think both Mr. Livesey and Colonel Simpson should be approached with a view to retaining them as members.

Mr. WHITLEY BAKER mentioned that he believed Colonel Simpson had already paid his subscription for the current year, so that he would continue a member till next December in any case.

The PRESIDENT: With regard to Captain Rees-Mogg and Captain Leeney, however, I am afraid there is no alternative but to accept their resignations with regret.

Mr. WHITLEY BAKER seconded this, and it was agreed to, the PRESIDENT observing that no doubt the Hon. Secretary would write to both Mr. Livesey and Colonel Simpson and try and get them to reconsider their decisions.

SECRETARY'S REPORT.

The Hon. Secretary's report, which, as stated above, had previously been submitted to the Council, read as follows:—

Looking back on the past year the predominant feeling must be one of regret that greater interest has not been shown by the members generally. At the annual meeting twelve months ago it was decided that the whole of the members of the profession in the southern area should be circularised with a view if possible to resuscitating interest in our meetings, but although nearly 200 copies of that circular were sent out at a cost for printing and postage alone of something over £2, the net result was only two applications for membership. Apart from the joint meetings with the South Eastern and Royal Counties Societies, two meetings of our own Society have been held during the past year, one in October, in connection with a meeting of the Southern Branch of the National Veterinary Association, at which Professor Edwards' paper on "Contagious Abortion" was discussed, and the other in December last, when those who attended had the privilege, not only of hearing an excellent address by our President, Mr. J. W. McIntosh, but also of having some extremely interesting cases brought to their notice by Professor E. Brayley Reynolds, O.B.E., and Mr. J. Willett. The joint meetings, though started with the best of intentions under Mr. Livesey's presidency, have, owing to their cost, proved a serious drain on our financial resources, and one out of all proportion to the interest taken by our own members, as shown by their attendance at those getherings.

FINANCIAL STATEMENT.

The Honorary Treasurer (Mr. E. WHITLEY BAKER), in submitting the financial statement, remarked that the position was one which gave some cause for anxiety. For the year ending March, 1920, their income was £21 3s. and their expenditure £24 1s. 7d. From March, 1920, till the end of that year they received £18 7s. 6d., against an expenditure of £28 10s.; and their income last year was £17 5s. and their expenditure £25 16s. 7d. The consequence was that on the 31st of December last they had only some £12 2s. 4d. in hand, out of which to meet a liability of £4 2s. 11d., their share of the expenses of the joint meeting at Reading, £3 1s. 5d., their share of the expenses of the joint meeting at Folkestone and the expenses of that meeting, which he understood would not be much under £4. In other words, they had roughly liabilities amounting to £12, which would absorb all their balance at the end of December, and so far the subscriptions received this year only came to £8 8s.

(To be continued).

Lancashire Veterinary Medical Association.

DISCUSSION ON MR. HOLROYD'S PAPER.

(*Concluded.*)

Lieut-Col. J. W. BRITTLEBANK, continuing, said Mr. Holroyd refers to the specific mastitis of tuberculosis and goes on to say that where an udder is affected with tuberculosis the prominent lesions are found high

up in the parenchyma. This is contrary to my experience, for I have more often found such lesions low down, and in examining for tuberculosis I always examine the walls of the ampulla and the immediately surrounding tissue as carefully as possible. Many writers lay much stress upon the importance or rather the significance of enlarged supra-mammary lymphatics, and personally I attach little importance to this as there are many occasions upon which such enlargement may be found in udders perfectly free from tuberculosis. It is true of course that where tuberculosis of a quarter is present there you will invariably find the lymphatic gland involved, but as an aid to diagnosis I am persuaded that its importance has been much over-rated. It is in my opinion a veritable pitfall for young practitioners. Indeed the whole question of the clinical diagnosis of early tuberculosis of the udder is beset with difficulties.

I regret that in the time at our disposal it is not possible to go more fully into the subject so ably introduced by Mr. Holroyd. It is of national importance and the source of inestimable loss to the agricultural community, and one hopes that some day some very serious investigation may be started with a view to reducing a loss which is viewed with extraordinary apathy to-day. But I feel strongly in this and other animal diseases which require full investigation that the industry affected does not take its full share of financial responsibility in providing the necessary funds to carry on such work.

I again thank Mr. Holroyd for his paper.

Mr. E. H. CURBISHLEY, M.R.C.V.S., thought that this was a most opportune time to bring before the association the subject of mastitis, because at the last meeting a pathologist had been appointed, who would undertake the examination of swabs. He felt that the most troublesome point that had to be decided with regard to mastitis was to take the responsibility on behalf of clients of deciding which were the cases that should be treated, and which should not, and whether those that were not treated were without question useful as salvage for food purposes. If they were treated, the question arose as to the cause, it might not always be bacterial to begin with, but it very rapidly became so.

With regard to treatment, the application of continual heat in the form of poultices was certainly useful; the old-fashioned medium used to be roasted hops. With regard to the injection of antiseptics into an infected quarter, he did not think one could reasonably expect that they should have any effect once the disease had developed.

There was another cause which had been mentioned, the use of milking tubes, which were very dangerous things in anybody's hands, and which he thought should not be used.

Then there was the case of the cow giving blood-stained milk. Did those cows develop mastitis? As a rule they did not; but if there was any secondary infection, and any advance of microbes through the teat, they might give rise to very serious symptoms.

In conclusion, he would like to compliment Mr. Holroyd on his paper.

Mr. J. D. WHITEHEAD, F.R.C.V.S., referring to Mr. Curbishley's remarks with regard to the salvage of early cases for food purposes, intimated that it was very definitely laid down in a report recently published in the *Record* that all the organs of an animal suffering with acute mastitis should be condemned, and it looked to him in view of this that the practitioners should go on treating such cases.

Mr. E. H. STENT, M.R.C.V.S., in referring to the experience of Lieut.-Col. Brittlebank with regard to vaccine treatment, submitted that the dose used in this country is not sufficient, adding that in America they claimed a good deal of success from this treatment, but where we in this country used millions, they used billions.

Mr. HOLROYD, in reply: I have thought that mastitis has not always been due to bacterial infection, and for a long time I have thought that some other causes that we do not know of are a pre-disposing agent to it. I do not think that injuries cause mastitis.

As to its being seasonal, we find that in the summer months we get many more cases than at any other time of the year, especially in dry cows. My experience with the quarter that has been affected is that it dries up, and you don't get any discharge at all after a certain time. It is only to cows in good condition that I would give a brisk cathartic, and I still think that a cathartic is a good thing. Hot applications continuously for 12 hours are certainly very good, but in practice it is very hard to get the owners to carry this out.

Mr. Curbishley mentioned about the cases which are worth treating. If we were sure of them being fit for food it would be best to treat them, but as Mr. Whitehead points out, the authorities will not pass them.

As regards flies, they do in the summer time play a considerable part in the production of mastitis. In cases where the end of the teat is blocked, if you will leave the quarter alone you will not have mastitis.

Mr. J. D. WHITEHEAD, F.R.C.V.S., proposed a vote of thanks to Mr. Holroyd for his interesting paper, which was seconded by Mr. STENT, M.R.C.V.S., and carried unanimously.

Mr. HOLROYD, in reply, thanked the meeting.

J. SPRUELL, *Hon. Sec.*

Notes and News.

Foot-and-Mouth Disease.

Only four fresh premises were found to be affected with foot-and-mouth disease during the week ended 23rd April, 1922, as compared with six during the previous week and 10 the week before. All occurred on the 17th and 18th inst., one in Northumberland, another in Yorks (E.R.), and the remaining two in Forfar.

All the cases were dealt with by the slaughter of the animals involved, viz., 64 cattle and 42 pigs. The origin of the Northumberland outbreak is obscure. The East Riding case is a local extension. In both the Forfarshire cases pigs only were concerned. These two cases were only 20 yards apart, and both are within 100 yards of an existing outbreak confirmed on the 9th April.

An Order came into force on the 22nd April, having the effect of reducing very considerably the extent of the Scheduled Districts both in England and Scotland, and of giving increased facilities for movement under licence into and within the areas remaining scheduled.

The removal of restrictions from the earlier infected premises was sanctioned in 130 cases during the week, bringing the number of infected places freed to 707 out of the total of 1,079 declared infected in the whole of Great Britain since the 23rd January, 1922.

On May 2nd it was announced that the disease had again broken out in Leeds, a herd of 22 beasts and 25 pigs being involved.

ERRATUM.

In the report of Mr. James Henderson's paper on "Meat Inspection, with Special Reference to Toxæmias," published in the issue dated April 22nd, page 271, column two, paragraph one, line 13, "*B. paratyphorus*" should read "*B. paratyphorus B*," there being more than one organism of this type.

ULTRA-VIOLET RAYS AND ANTHRAX.

With reference to statements recently made that a method had been discovered of disinfecting wool or other material infected with anthrax by means of ultra-violet rays, it is reported by the Home Office Committee on Anthrax that a test of the method was recently carried out by the Committee at Liverpool in which the apparatus was supplied and manipulated by the inventors, and that samples taken from bales of wool subjected to the process showed, on being examined bacteriologically, that the anthrax spores had not been destroyed, and that there was no indication of disinfection.

Giving evidence for the defence in a dismissed "cruelty case" at Brighton, Mr. J. W. Pritchard evidently made an impression with his statement, as reported by the *Sussex Daily News*, that "he was one of the few veterinary surgeons who had the distinction of keeping a horse!"

Nearly 150,000 horses were slaughtered for human consumption in Germany in 1921, according to *Vorwaerts*, which also quotes official figures showing that 5,481 dogs were slaughtered for the same purpose.

Obituary.

Mr. W. G. M. Braes.

Mr. William G. M. Braes, M.R.C.V.S., Linlithgow, who some ten days ago underwent an operation in an Edinburgh nursing institution, died there on April 23rd. Mr. Braes who was about 52 years of age, was the third son of the late Mr. John Braes, merchant, Linlithgow, and had a large practice in West Lothian and bordering counties for thirty years.

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.
All correspondence must bear the name and address of the contributor for publication.
The Editor does not hold himself responsible for the opinions of his correspondents.

An Appeal from Russia.

Sir,—I have received the following letter from a Russian Veterinary Surgeon:—

Odessa.

Esteemed Colleagues,—I am a veterinary surgeon, Constantin Petrovich Ostapenki, manager of a factory for utilising waste animal products. I am in the greatest need, and beg you to help me by means of the American Relief Administration, 67 Eaton Square, London, by sending me a parcel of food. At the first possibility I will return you any sum which you have paid to the A.R.A. with greatest thanks.—Yours faithfully, C. P. Ostapenki.

I understand the American Relief Administration undertakes to deliver parcels of food to individuals in Russia, and for a payment of £2 6s. 0d. sufficient food is sent to last for a month. A receipt is obtained from the recipient. If any member of the profession desires to help this case, I will willingly undertake to transmit any contributions to the A.R.A. and give the necessary instructions.—Yours faithfully, Fred Bullock.

10 Red Lion Square, London, W.C.
13th April, 1922.

Army Veterinary Service.

London Gazette. War Office. Territorial Army.

April 28th.—Capt. T. A. B. Cocksedge relinquishes his commission (September 30th, 1921, under A.O. 166/21, as amended by A.O. 332/21), and is granted rank of Major (substituted for that which appeared in the *Gazette* of December 30th, 1921); Lt. H. V. Hughes resigns his commission (April 29th), and retains rank of Lieut.

Diseases of Animals Acts, 1894 to 1914. Summary of Returns.

Period.	Rabies. Cases Confirmed. Dogs.	Rabies. Cases Confirmed. Other Animals.	Anthrax. Outbreaks confirmed.	Anthrax. Animals attacked.	Foot-and-Mouth Disease. Outbreaks confirmed.	Foot-and-Mouth Disease. Animals slaught'd as diseased or exposed to infection.	Glanders (including Farcy).* Outbreaks reported by the Local Authorities.	Glanders (including Farcy).* Animals attacked.	Parasitic Mange. Outbreaks reported by the Local Authorities.	Parasitic Mange. Animals attacked.	Sheep Scab. Outbreaks reported by the Local Authorities.	Swine Fever. Outbreaks confirmed.	Swine Fever. Swine slaughtered as diseased or exposed to infection
GT. BRITAIN.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Week ended 22nd April, 1922 ...	...	...	15	19	4	148	...	...	20	23	6	22	10
Corresponding Week in 1921	...	...	7	10	2	252	...	...	42	57	9	32	13
Corresponding Week in 1920	...	...	7	7	2	126	...	...	80	123	3	49	11
Corresponding Week in 1919	9	...	5	8	...	...	...	...	125	255	...	32	15
Total for 16 weeks, 1922 ...	...	...	211	234	1079	52195	...	...	591	885	386	365	131
Corresponding period in 1921	18	1	206	243	27	2641	3	6	1164	1845	346	369	111
Corresponding period in 1920	4	...	154	186	41	2127	9	16	2046	3614	261	700	244
Corresponding period in 1919	50	2	61	84	19	1033	5	28	2491	4944	202	374	130

Note.—The figures for the current year are approximate only. *Excluding outbreaks in Army horses.

IRELAND.												
Week ended 22nd April, 1922	...	...	...	...	...	...	Outbreaks 2	1	5	85		
Corresponding Week in 1921 ...	...	...	...	...	...	...	2	3	...	2		
Corresponding Week in 1920 ...	1	1	...	...	..	...	3	2	1	2		
Corresponding Week in 1919 ...	...	...	...	...	...	...	1	10	1	1		
Total for 16 weeks, 1922	...	...	...	...	...	...	52	95	86	521		
Corresponding period in 1921	...	...	2	41	...	...	35	127	21	160		
Corresponding period in 1920 ...	1	1	...	...	1	3	56	136	3	13		
Corresponding period in 1919 ...	...	...	...	...	1	1	54	135	15	48		

Note.—The figures for the current year are approximate only.

VETERINARY VISITS TO BELGIUM AND ITALY.

Arrangements have been made for Special Visits of Veterinary Surgeons, their wives and friends, for

Seven Days at Whitsuntide

to BRUGES (Hotel Memling), the BATTLEFIELDS (including YPRES) AND THE BRUSSELS VETERINARY SCHOOL,

£9 - 9 - 0 inclusive.

Also for Three Weeks in September (when the Congress of Comparative Pathology is held in Rome) to ROME, FLORENCE, MILAN, TURIN, VENICE and NAPLES, **£40**, visiting the Veterinary Schools,

The President of the Congress of Comparative Pathology is PROFESSOR PERRONCITO, formerly the Director of the Royal Veterinary School attached to the University of Turin.

These will be excellent opportunities to meet our Continental Confrères.

Full particulars from

The Editor, "The Veterinary Journal," 165 Church St., Kensington, London, W.

SERUM LABORATORY, ANTWERP.

(Formerly LABORATORY VANDERHEYDEN, LTD.) Founded in 1906.

By Appointment to the Belgian Government for Sero-Vaccination against Swine Erysipelas, etc.

Members of the Veterinary Profession may obtain Serum and Vaccines against Swine Erysipelas, Strangles, Tetanus, White Scour, Canine Distemper, Lymphangitis, Polyarthritis, etc., also Tuberculin.

Price List and Instructions sent on application to the Laboratory:

39 et 41 RUE DES MOUCHES, ANTWERP.

Telegrams "LABOSERUM, ANTWERP."

SAVE THE FOALS AND CALVES

JOINT-ILL IN FOALS.

Antistreptococcic Serum, Equine (P., D. & Co.), is reported to have yielded most gratifying results as a prophylactic of joint-ill (also known as navel-ill, umbilical infection, pyæmic arthritis), see *Veterinary Record*, Nov. 16, 1918, p. 164; Jan. 1, 1921, p. 3; Sept. 24, 1921, p. 771. Each in-foal mare should be given 15 c.c. of the serum hypodermically, about the tenth and third days before the expected date of foaling, and each foal should be given 7·5 c.c. of the serum within from 24 to 48 hours after birth, and a similar dose after a week's interval.

This serum is also of great value in the *treatment* of joint-ill, also of strangles, poll-evil, fistulous withers, and all forms of streptococcus infection.

Immunisation of the mare with vaccine is also recommended (see *Veterinary Record*, Mar. 6, 1920, p. 418). For this purpose, PARKE, DAVIS & Co.'s **Streptococcus-Staphylococcus Bacterin, Equine**, should be injected hypodermically a few months before the date of foaling.

WHITE SCOUR IN CALVES.

Anti-White-Scour Serum, Bovine (P., D. & Co.), is believed to be almost specific for the prevention or treatment of the very fatal infectious disease of newly-born calves (also foals, pigs and lambs) known as "white scour."

AS A PREVENTIVE, from 10 to 20 c.c. of the serum should be injected hypodermically as soon as possible after the birth of the animal in any district in which white scour is prevalent.

AS A CURATIVE, 20 to 30 c.c. of the serum should be injected hypodermically as early as possible, and repeated every six to twelve hours whilst necessary.

A distinguished veterinary authority, writing on the subject of "White Scour" in *The Veterinary Record* of April 29, 1916, states:—"I have robbed several outbreaks of their normally "high casualties by the early use of a serum as prepared by "Messrs. Parke, Davis & Co."

Further particulars will be sent on request.

PARKE, DAVIS & Co., 50 BEAK STREET, REGENT STREET, LONDON, W.1.